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THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

DEPARTMENT OF COMPUTER APPLICATIONS

Program: Bachelor of Computer Applications

Semester-I End Semester Examination (Practical)

Date:17-10-2019 Day: Thursday Duration: 10:15AM- 11:15AM

BCA1112C04 Introduction to Programming using Python Lab Marks: **40**

Batch-A

INSTRUCTIONS:

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1. Attempt all.
2. In the beginning of each file, write the program objective, name of programmer, date of program creation, programming language and version of program.
3. Name your variables appropriately.
4. Add comments whenever necessary. Functions should have doc string.
5. Write pythonic code.

SET B

Q1. **(10)**

Write a program to find all roots of a quadratic equation

Hint:

A quadratic equation is an equation in the form of

$$ax^2 + bx + c = 0$$

Solving quadratic equation

A quadratic equation can have either one or two distinct real or complex roots depending upon nature of discriminant of the equation. Where discriminant of the quadratic equation is given by

$$\Delta = b^2 - 4ac$$

Depending upon the nature of the discriminant, formula for finding roots is be given as.

- Case 1: If **discriminant is positive**. Then there are two real distinct roots given by.

$$\frac{-b+\sqrt{\Delta}}{2a} \quad \text{and} \quad \frac{-b-\sqrt{\Delta}}{2a}$$

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- Case 2: If **discriminant is zero** then, it has exactly one real root given by.

$$-\frac{b}{2a}$$

- Case 3: If **discriminant is negative** then, it has two distinct complex roots given by.

$$\frac{-b}{2a} + i\frac{\sqrt{-\Delta}}{2a} \quad \text{and} \quad \frac{-b}{2a} - i\frac{\sqrt{-\Delta}}{2a}$$

Example
Input

```
Input a: 8
Input b: -4
Input c: -2
```

Output

```
Root1: 0.80
Root2: -0.30
```

Q2. **(10)**

Write a function to generate all the leap years between two years supplies as function arguments.

dispLeaps(syear, eyear) where syear is starting year and eyear.

Q3. **(20)**

Write functions to perform the following operations on a string:

a) Find the Length of the String.
strLength(string)

b) Search a string in the given String
strSearch(substring, string)

c) Reverse the string.
strRev(string)

d) Swap one string with another.
strswap(stringq, string2)

Call these functions to work with a user inputted string.
